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## PORTABLE DISPLAY DEVICE

## CROSS-REFERENCE TO RELATED APPLICATION

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## TECHNICAL FIELD

The present invention relates to a foldable type portable display device that can realize the large-sized screen with plural display elements, and more particularly to a portable display device that optical elements provided on the top surfaces of display elements, respectively are arranged coming into contact each other when the display device is unfolded, thereby minimizing a non-display area on a joint portion between the adjacent display elements.

## BACKGROUND ART

Conventionally, a technology for realizing a large-sized screen with two or more display elements was applied in a large display device. In recent years, as the mobile information system has been developed to have a wireless internet function, a need of the large-sized screen is more increased. However, the large-sized screen cannot meet the most of portable characteristics of the portable display device and then a foldable type portable display device is suggested.

Generally, as flat display elements used for the portable display device, a liquid crystal display (LCD), a thin film transistor (TFT)-LCD, a field emission display (FED), a plasma display panel (PDP), an electro luminescent (EL), an electronic paper and etc., have been used.

As a portable display device with multiple display elements, a foldable type display device is suggested for increasing portable characteristics. However, in a prior foldable type display device, when panel housings having display elements, respectively are unfolded, the display elements of the panel housings can not effectively come into contact each other. Furthermore, a fixing member and a chassis should be designed appropriately to the foldable display device.

## DISCLOSURE OF INVENTION

## Technical Problem

The present invention has been made in an effort to solve the problems described above and it is an objective of the present invention to provide a foldable display device that at least two foldable panel housing for receiving a display element may be folded or unfolded, the display elements coming into contact to form a single large size screen in the unfolded position of the panel housings.

## Technical Solution

To achieve the above objective, the present invention provide a portable display device comprising;

at least two display elements;

at least two foldable panel housings for receiving and supporting the display elements, circuit boards and other parts, respectively; and wherein one sidewall of the panel housings are cut to form an cutting zone, so that an opposite sidewalls of the display elements may be adjacently disposed each other when the panel housings are unfolded.

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The cutting zone of the panel housings is a connecting joint portion for allowing that the display panels may be adjacently disposed each other and when the cutting zone is an opening, a protecting member is provided at the opening.

The portable display device further comprises an optical element and the optical element is provided in a joint portion to reduce the width of the connecting joint portion.

The portable display device may include a supporting member for supporting the display element, the supporting member is provided with a connecting joint portion

It is preferred that when the display element is mounted on the chassis, the chassis is provided with a connecting joint portion, and the connecting joint portion of the chassis covers the sidewall of the display element only and is disposed at the joint portion of the panel housing.

It is preferred that total image data signals are preferably divided and transferred to the display elements.

According to another embodiment of the present invention, a portable display device is provided, comprising;

at least two display elements;

at least two foldable panel housings for receiving and supporting the display elements, circuit boards and other parts, respectively; one sidewall of the panel housings being cut to form an cutting zone, so that an opposite sidewalls of the display elements may be adjacently disposed each other when the panel housings are unfolded; and

wherein the display element comprises a display panel and a circuit board, and an outer electrode for transferring data signals and common signals to the display panel is formed at the one side of the display panel.

It is preferred that the outer electrode formed at the display panel is disposed at a connecting joint portion or an opening formed in the panel housing when the display panel is mounted on the panel housing.

It is also preferred that the outer electrode of the display panel is disposed at a connecting joint portion of the chassis or a supporting member, when the display panel is mounted on the chassis or the supporting member.

## Advantageous Effects

The present invention provides a foldable type portable display device for realizing the large-sized screen with a joint portion as a non-display area between two or more display panels is minimized.

According to the present invention, the non-display area as the joint portion may be compensate by means of an optical element, and the driving signals are divided and transferred to two display elements for realizing a single large-sized screen.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1 and 2 are perspective views illustrating a foldable type portable display device according to the present invention;

FIGS. 3 to 5 are sectional views showing unfolded panel housings of a portable display device of the present invention;

FIG. 6 is an perspective view showing a portable display device in a partially unfolded position;

FIGS. 7 and 8 are perspective views showing a portable display device with a gap between display elements according to the present invention;

FIG. 9 is a plan view illustrating a portable display device of which the panel housings are unfolded;

FIGS. 10 and 11 are views illustrating an optical element;

FIG. 12 is a perspective view of a portable display device with a cover removed;